



REMARKS

1) **Remarks Concerning Amendments to the Specification**

In some instances the specification has been amended to improve grammar and syntax and to correct minor typographical errors. In other instances, amendments have been made to the specification to ensure consistency between the reference numerals used in the text and the numerals shown in the Figures. These amendments introduce no new subject matter.

2) **Remarks Concerning Amendments to the Figures**

Figures 2a, 3a, 4b, and 6c currently on file have been replaced with amended formal Figures 2a, 3a, 4b, and 6c in order to ensure consistent identification of elements as between the figures and the specification. More specifically, in several instances, the figures have been amended to correct misidentified elements and in several other instances, to include reference numerals for elements described in the specification but not identified in the figures. Additional copies of the sheets of drawings containing the newly amended Figures are enclosed, showing the proposed amendments in red.

In amended Figure 2a, cross beam 39 has been identified in the drawing, in a manner consistent with the specification.

In amended Figure 3a, duplicate reference numeral 216 designating a rectangular tube, has been deleted.

In amended Figure 4b, side sill 44 has been identified in the drawing, in a manner consistent with the specification.

In amended Figure 6c, stepped flange 450 described in the specification, has been identified in the drawing.

No new subject matter has been added by the present Amendment.

3) **Remarks Concerning Amendments to the Claims**

Claim 7 has been cancelled.

Claim 13 is identical to claim 11. To avoid claim duplication, claim 13 has been cancelled.

Claims 2, 3, 4, 8, 16, 26 and 30 have been amended to ensure consistent use of terminology throughout the claims. A more detailed explanation of the proposed claim amendments follows below.

In claim 2, the expression "said top truss" was amended to --said top truss assembly-- to ensure consistency in claim language between claim 2 and base claim 23.

In claim 3, the expressions "web assembly" and "top truss" were amended to --vertical web assembly-- and --top truss assembly--. These elements are now referenced in a manner consistent with the base claim 23. In addition, the expressions "said main sill" and "said decking" were amended to --said deck structure-- in accordance with the antecedent basis provided in claim 23. These amendments were made necessary because of the change in dependency by which the antecedent basis for these terms was changed.

In claim 4, the expressions "web assembly" and "decking structure" were amended to --vertical web assembly-- and --deck structure--, respectively, to ensure reference to these claim elements remains consistent throughout the claims. In addition, the wording "said car has an upper beam assembly, said upper beam assembly including a top truss and a beam stem" was amended to read --said top truss assembly includes a top truss and a beam stem--. Thus amended, the claim avoids the double inclusion of elements, these features already having been recited in base claim 23.

In claim 8, the preamble was amended to be consistent with that of the base claim 23 from which it depends.

With reference to claims 11 and 14, prior to the amendments made in the Response to Office Action dated May 24, 2002, claims 11 and 14 depended from claim 1. In the Response of May 24, 2002, claim 1 was cancelled and the dependency of each of claims 11 and 14 was modified such that each claim now depends from claim 23. Making claims 11 and 14 depend from claim 23 has resulted in the double inclusion of elements. Accordingly, claims 11 and 14 have been re-written to avoid double inclusion of claim elements therein in view of their dependency from base claim 23. In particular, base claim 23 recites that the medial decking portion has a pair of medial decking side sills mounted therealong. Prior to the present amendment, claims 11 and 14 recited side sills having medial side sill portions. Claims 11 and 14, as presently amended, ensure that the various claim elements are introduced only once and then identified with consistent terminology, thereby avoiding any double inclusion.

In claims 16 and 26, the expression "said medial portion side sill web" was amended to --said medial decking side sill web-- for the sake of consistency with base claim 23 from which these claims ultimately depend.

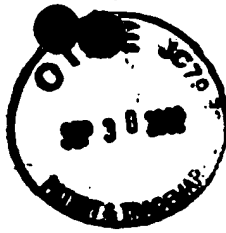
Claim 24 was amended to improve the grammar and syntax of the claim.

In claim 30, the expression "web assembly" was amended to --vertical web assembly-- to ensure reference to this claim element remains consistent throughout the claims.

Attached hereto is a marked-up version of the changes made to the specification and the claims by the present Amendment. The attached page is captioned "Version with markings to show changes made."

Entry of the present Amendment is respectfully requested.

Serial No. 09/649,790



Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Stephen L. Grant', is written over the typed name.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE**In the specification**

The paragraph beginning at page 3, line 4, has been replaced with the following amended paragraph:

--It is also desirable that the bundles stack squarely one upon another. Although it is possible to use wooden battens at the top end of the center beam web, this will tend to cause the top bundle to sit outwardly of its neighbours. It has been observed that a thin wooden batten, of 3/4" thickness may tend to bow inwardly between adjacent posts, and may not spread the wear load as much as may be desired. A 1 - 1/2 inch thick wooden batten may have a greater ability to resist this bowing effect. However, the space available for employing a batten may tend to be limited by the design envelope of the car. Inasmuch as it is advantageous to load the car as fully as possible, and given that the design of the car may usually reflect a desire to maximize loading within the permissible operational envelope according to the applicable AAR standard, the use of a relatively thick wooden batten may tend to push the outside edge of the top bundle outside the permissible operational envelope. Wooden battens may also be prone to rotting if subject to excessive exposure to moisture, or may be consumable wear items that may require relatively frequent periodic replacement.--

The paragraph beginning at page 3, line 34, has been replaced with the following amended paragraph:

--Increased vertical loading to exceed Plate C, as in a Plate F car, may tend also to increase the height of the center of gravity of a loaded car above the allowable vertical center of gravity height limit of 98 inches measured from top-of-rail (TOR). Consequently it may be desired to drop the center portion of the deck further to once again lower the center of gravity. However, as the deck is dropped further, the deck must also become narrower to remain within the AAR design envelope, whether of Plate C or Plate F. Further still, when the truck centers of the car exceed 46 ft. 3 in., the mid-span car width must be reduced due to swing out as the car travels through corners. That is, the car must lie within the design envelope of a 10' - 8" wide car with 46' - 3" truck centers, on a 13° curve (equivalent to a track center radius of 441.7 ft.). ~~[For a having a nominal length of 73 ft. and a 56 ft well, will probably have a distance between truck centers of the order of 67 or 68 ft. The allowance for swing out, (that is, the reduction in width to match a car having 46' - 3" truck centers), for such a car is significant.]--~~

The paragraph beginning at page 7, line 26, has been replaced with the following amended paragraph:

--In a further aspect of the invention, there is a rail road car having a longitudinal centerline. It comprises a pair of rail car trucks and a center beam assembly carried thereupon. The center beam assembly has a lower flange assembly, an upper flange assembly, and a web assembly extending between the upper and lower flange assemblies. The web assembly has a plurality of upwardly extending posts. The posts have a lower region and an upper region. The web assembly has a non-consumable skirt mounted to the upper region of the posts. The skirt presents a bearing surface. The bearing surface faces laterally outward relative to the longitudinal centerline of ~~[said]~~ the rail road car. Cargo can bear against the bearing surface.

The paragraph beginning at page 8, line 24, has been replaced with the following amended paragraph:

--In yet another additional feature, the medial decking portion lying between the two trucks is at least 28' - 0" long. In a further additional feature, the medial decking portion lying between the two trucks is at least 40' - 0" long. ~~[In still a further additional feature, when loaded with lumber having a density of up to 1740 Lbs./ft.³, if fully loaded, the rail car has a center of gravity falling within a range whose upper limit is 98 inches above top of rail.]~~--

The paragraph beginning at page 9, line 15, has been replaced with the following amended paragraph:

--In still yet another additional feature, the car has a pair of side sills extending along the deck structure. The side sills each have a side sill medial portion mounted to the medial decking portion. The medial side sill portion has a first depth of section. The side sills each have side sill end portions mounted to the end decking structures. The ~~[end]~~ side sill end portions have a second depth of section. Each of the side sills has a knee joining the side sill medial portion to each of the side sill end portions. Each knee has a longitudinally inboard flange, a longitudinally outboard flange, and webbing extending therebetween. The longitudinally outboard flange has a lower extremity and an upper extremity. The lower extremity lies at a longitudinally inboard station relative to the upper extremity.--

The paragraph beginning at page 13, line 12, has been replaced with the following amended paragraph:

--Figure 2a shows a side view of ~~[one half of]~~ a center beam rail road car similar to the center beam car of Figure 1;--

The paragraph beginning at page 15, line 33, has been replaced with the following amended paragraph:

--In detail, main center sill 36, is a fabricated steel box beam that extends longitudinally along centerline 25 of car 20 throughout its length, having couplers 38 mounted at either end. Cross bearers 40 extend outwardly from center sill 36 to terminate at a pair of longitudinal left and right hand side sills 42, 44 that also run the length of the car. In the various embodiments of rail cars shown herein, cross-bearers are indicated as item 40 and cross-ties are indicated as item [41] 39. These cross bearers and cross ties extend laterally outward from center sill 36 on approximately 4 ft centers. Decking 46 is mounted to extend between cross-bearers 40, and cross-ties [41] 39 providing a shear connection between adjacent cross-bearers when side loads are imposed on the car. Structural members in the nature of tapered risers 48 are mounted above the cross-bearers to form the base of a bunk for carrying loads. Risers 48 are tapered so that loads stacked thereupon will tend to lean inwardly toward the center-line of car 20. The upper surfaces of risers 48 define respective end decking portion and medial decking portion load-bearing interfaces. The combined structure of center sill 20, cross-bearers 40, and side sills 42, 44 and decking 46 provides a wide, lower beam or lower flange assembly extending laterally outward from the longitudinal centerline of car 20.--

The paragraph beginning at page 17, line 26, has been replaced with the following amended paragraph:

--Figures 4a and 4b are half sectional views of center beam railroad car 70 taken, respectively, at cross-tie [41] 39 of end deck portion 27 looking inboard parallel to centerline 25, and at mid-span of medial deck portion 29, looking toward the nearest adjacent cross-bearer 40. The outline of AAR Plate F is indicated generally as 'F'. A main center sill is indicated, as above, as 36. It has an upper horizontal member in the nature of upper main flange 102, and a pair of spaced apart vertical shear carrying members in the nature of left and right hand main sill webs 103, 104, thus forming three sides of a box. The fourth side of the box is formed by a lower horizontal member, in the nature of a main sill lower flange 106. Lower flange 106 has an end portion, running along the outboard portion of main sill 36, in a manner similar to a stub sill, indicated in Figure 3a as 108 at a height for mounting upon truck 22 or 23 as the case may be. The rectangular female socket 28 defined by the inner walls of items 102, 103, 104 and 108 is of a size and shape for receiving the male end of a coupler, such as coupler 38.--

The paragraph beginning at page 19, line 23, has been replaced with the following amended paragraph:

--In Figure 4d, side sill end portion 152 also has the form of a skewed C-channel, having an outwardly and upwardly slanted web or back 154 having an upper edge and a

lower edge, the upper edge lying further transversely outboard than the lower edge. Back 154 is inclined from the vertical at an angle ψ . ψ is less than β described above[;]. Side sill end portion 152 has a top flange 156 that is substantially level in a horizontal plane[;], and a bottom flange 158 that is parallel to top flange 156, but inwardly inset according to the horizontal run of slanted back 154. Winches 160 (not shown in Figure 3a) are mounted at the longitudinal stations corresponding to main bolster 142 and cross ties 146, 148, and 150.--

The paragraph beginning at page 20, line 17, has been replaced with the following amended paragraph:

--Knee [49] 47 is located at the transition, or step, between end portion 28 and medial deck portion 29. Knee 47 is located at a mid-bay longitudinal station between the longitudinal stations of formed post 206 and fabricated post 208. A laterally extending, generally horizontal transition flange 210 extends flush with, and between, main sill lower flange 107 and side sill medial portion upper flange 102. At the same longitudinal station, a side sill end portion stiffener, in the nature of a rectangular tube 216, is mounted to extend between center main sill 36 and the inboard end of side sill end portion 152. A vertical wall member, in the nature of a well bulkhead sheet 220 is mounted to extend vertically upward from transition flange 210, past the inboard end of side sill end portion 152 and rectangular tube 216, up to the level of false floor sheet 188. Sheet 220 terminates at its upward end in a formed flange 222, which overlaps, and is welded to, sheet 188. An inner tapered gusset 226 is located at the longitudinal station of transition flange 210 and extends between the inner face of medial side sill portion and the underside of transition flange 210. Similarly, at the same longitudinal station, a side sill gusset 230 reinforces the section of side sill portion 126.--

The paragraph beginning at page 20, line 33, has been replaced with the following amended paragraph:

--As viewed from the side of car 70 as illustrated in Figure 3a, knee 47 appears to have a longitudinally inboard vertical flange 232, that is, the transversely outboard or distal margin of well bulkhead sheet 220, and an outboard, angled flange 234 that faces, generally, toward truck 23, with a web or webs extending between sheet 220 and flange 234. Flange 234 includes three aligned portions. The first, lowest portion is a side sill gusset member 236, that closes the end of side sill portion 126 and extends upwardly on a slant toward the lower or bottom flange 158 of side sill end portion 152, to a locus of intersection somewhat inboard of the longitudinal station of formed post 206. The line of member 236 is continued by side sill end portion gusset 238, which is slanted to lie within the flanges and back of side sill end portion 152, and by a false floor gusset 239, located on the same angle between the top flange of side sill end portion 152 and false floor sheet 188. A trapezoidal gusset 240 fills the void between the bottom flange 158 of portion 152, the upper or top flange 130 of the end of medial portion 126, sheet 220, and

flange 234. When seen in end view, as in Figure 4a, flange 234, and the outboard edge of sheet 220, both follow an upwardly and outwardly angled profile, lying within Plate F. Providing an angled flange in this way, and thereby effectively deepening the width of section of vertical [leg] flange 232 of knee 47 may tend to increase the width of structure over which a moment couple generated in side sill medial portion 126 can be carried, thus tending to reduce the stress levels in the transition. [Member] Flange 234 terminates, at its upward and outward end, at false floor support top flange 185. Upper main sill flange 102 is trimmed back flush with main sill side webs 103 and 104 in the well section or medial portion of the car so that a smooth face is presented next to the lading.--

The paragraph beginning at page 24, line 16, has been replaced with the following amended paragraph:

--Rear facing flange member 408 is made from a bent plate cut to the desired profile. An upper leg 428 of member 408 runs downwardly from the end of the lower flange 427 of end side sill portion 380 (or 382) on an angle along the edge of quadrilateral web [member] portion 410. It bends downward into a lower leg 430 lying in a vertical plane at the longitudinal station of the end of the medial portion 384. Member 408 also has an inwardly tending leg 432 cut to a similar profile to leg 422 and toe 424, although having greater width when seen perpendicular to the vertically extending plane. A gusset 434 seats within the end section of side sill medial section 384 in the plane of leg 432, in a manner similar to gusset 426.--

The paragraph beginning at page 24, line 26, has been replaced with the following amended paragraph:

--Lower cross-member 418 is an angle iron having one leg 436 trimmed to lie in a vertical plane, perpendicular to the longitudinal centerline of car 350, between side web 360 (or 361) of main sill 356 and the trimmed transition of [~~forward-facing~~] front flange member 406. The other leg 435 of member 418 is trimmed to lie between, and be welded to, the outer edge of bottom flange 364 of main sill 356 and the juncture of the back or web, and upper flange of medial side sill portion 384. A stringer in the nature of an upwardly opening channel 438 extends from a hangar bracket web mounting 437 on the underside of member 418 to the first cross-bearer 439 (Figure 2g).--

The paragraph beginning at page 25, line 17, has been replaced with the following amended paragraph:

--In the one embodiment, car 70 has a well deck portion that is 40 ft-6 in. long. The internal lading height of the well, that is, the nominal loading height of the bunk defined between the medial decking portion load bearing interface and the wings 65, 67 (Figure 7a) of top truss 64 is 165 inches. As such, the height of top truss 64 from TOR,

at roughly 16 ft-7 in., significantly exceeds the AAR Plate C maximum allowable height of 15 ft-6 in. The upper flange of main sill 36 is carried at a height, relative to TOR, that is high enough to permit the top surface of the coupler to fit within main center sill 36 as in a socket. The centerline coupler height is 34 ½ inches above TOR. For a Plate F car, the height of the top of the coupler head is roughly 40 ¾ inches above TOR for a car, as new, with un-worn wheels, unloaded. Thus the top surface height of a ¾" thick main center sill top flange is roughly 41 - 1/2 inches above TOR. In the case of the staging, or false floor structures described above, the level of the false floor sheeting and hence of all points on the associated tapered risers, is above the level of the top flange 102 of main center sill 36, that is, at a level that is at least 42 inches from TOR. In the preferred embodiment of Figure 3a, this height, taken at the truck centers, for a new car with no lading and un-worn wheels, is 12 - ½ inches above the level of the main sill, or roughly 53 - ½ inches above TOR (+/- 1 inch). ~~[Further, when loaded with 51 inch wide bundles of kiln dried softwood of a density of 1740 lbs per 1000 board feet, the fully loaded center of gravity of car 70 does not exceed 98 inches above TOR, that is, the center of gravity falls within a range whose upper limit is 98 inches. Lesser volumes of higher density lumber up to 2000 Lbs. per 1000 board feet can also be carried.]~~

The paragraph beginning at page 30, line 1, has been replaced with the following amended paragraph:

--On assembly, L-shaped gussets 636, 637 are welded in each of sections 628, 629. Gussets 636 and 637 each have a profile to match the inside profile of the upper regions of main sheet portions 630, 631, legs 632, 633 and ~~[tee] toes~~ 634, 635. The toes of gussets 636 and 637 are welded along their outboard edges to the inside face of main sheet portions 630, 631. Sections 628 and 629 are welded along the centerline seam between abutting toes 634 and 635. A further, main[,] gusset 640 is trimmed to a shape to permit welding of its top edge to the underside of the toes 638, 639 of gussets 636, 637, its side edges to the inner face of the lower regions of main sheet portions 630 and 631; once welded in this manner, the base leg 642 of gusset 640 can be welded to toes 626 and 627 of angle irons 622 and 624, with a plug weld formed to fill the longitudinal gap therebetween. Gusset 640 is also trimmed to have reliefs 644, 645 to permit entry between the upwardly extending legs of angle irons 622, 624. Gussets 636, 637 and 640 are located at longitudinal stations that correspond generally to the longitudinal stations of posts 56 and 57 as the case may be. Legs 632, 633 of sections 628, 629 form, ideally, a flat surface to weld to top truss assembly 64, as before. Similarly, when installed, main sheet portions 630, 631 have slope continuity with flanges 496 and 498.--

The paragraph beginning at page 30, line 18, has been replaced with the following amended paragraph:

--In the alternative embodiment of Figures 10a and 10b, a deep upper beam 650 has a pair of formed sections 652, 654, a rectangular steel tube 656, a main gusset 658

and minor gussets 660 and 662. On assembly, minor gussets 660 and 662 are welded inside the lower regions of formed section 652 and 654, being shaped to conform to the shape of the lower region of outer main sheets 666, 668, inwardly stepped shoulder 670, 672, and inwardly extending legs 674, 676. A gap 'P' is left between the respective inboard edges of gussets 660 and 662, and their outboard edges are welded to the inner face of main sheets 666, 668. Gussets 660, 662 are trimmed to be clear of re-entrant toes 678, 680. Main gusset 658 is welded upon minor gussets 660, 662, with its lateral edges welded to the inside face of main sheets 652 and 654. Tabs 682, 684 at the distal ends of main sheets 666, 668 embrace the outer side faces of steel tube [652] 656.--

The paragraph beginning at page 32, line 24, has been replaced with the following amended paragraph:

--Panel 830 could be as thick as 1/2 or 5/8 inches. Although panel 830 is preferably a metal sheet welded to posts 820, a different fastening means, such as rivets, bolts or the like, could be used. A smooth steel face is preferred, but other metals, such as aluminum, could be used, or a suitable, rot resistant, UV resistant polymer could be selected, either as a solid sheet or as a face coating or layer, or sheet, upon a metal substrate. It is preferred that the material chosen be a non-consumable material, that is, one that may tend not to be prone to require frequent replacement such as may be required if softwood lumber battens are used, and also one that has little or no tendency to develop wood rot or to support the growth of molds.--

In the claims

Claims 2, 3, 4, 8, 11, 14, 16, 24, 26 and 30 have been amended as indicated:

2. (Amended) The center beam rail road car of claim 23 wherein said body has a bunk defined between said deck structure and said top truss assembly, said bunk having a loading height measured between said medial decking portion and said top truss assembly that is at least 165 inches.

3. (Twice Amended) The center beam rail road car of claim 23, wherein:

said vertical web assembly includes an array of posts extending upwardly from said [main-sill] deck structure and has an upper region adjacent to said top truss assembly and a lower region adjacent to said [decking] deck structure;

said upper region of said vertical web assembly has at least one longitudinally extending skirt against which lading can be placed.

4. (Twice Amended) The center beam rail road car of claim 23, wherein:

said car has a center sill, said deck structure being supported thereby;
said vertical web assembly includes an array of posts extending upwardly from said center sill and has a lower region adjacent to said ~~[decking]~~ deck structure and an upper region distant therefrom;
said ~~[car has an upper beam assembly, said upper beam]~~ top truss assembly ~~[including said]~~ includes a top truss and a beam stem, said top truss being mounted upon said beam stem and said beam stem being mounted to said upper region of said vertical web assembly; and
said beam stem includes at least one longitudinally extending skirt against which lading can be placed.

8. (Twice amended) The center beam rail road car of claim 23 wherein said end decking portions and said medial decking portion each have a load bearing interface, and the load bearing interface of said end decking portions is stepped upwardly relative to the load bearing interface of said medial decking portion a distance of at least 30 inches.

11. (Twice Amended) The center beam rail road car of claim 23 wherein:

~~[said rail road car has a pair of side sills extending along said deck structure;~~
~~said side sills each have a medial side sill portion mounted to said medial decking~~
~~portion,]~~ said medial decking side ~~[sill portion having]~~ sills have a first depth of section;
said ~~[side sills each have side sill end portions mounted to said]~~ end decking ~~[structures;]~~ portions have end decking side sills, said end decking side ~~[sill portions]~~ sills having a second depth of section; and
said first depth of section is less than said second depth of section.

14. (Twice Amended) The center beam rail road car of claim 23, wherein:

~~[said car has a pair of side sills extending along said deck structure;~~
~~said side sills each have a side sill medial portion mounted to said medial decking~~
~~portion,]~~ said medial decking side ~~[sill portion having]~~ sills have a first depth of section;
said ~~[side sills each have side sill end portions mounted to said]~~ end decking ~~[structures;]~~ portions have end decking side sills, said end decking side ~~[sill portions]~~ sills having a second depth of section;

each of said medial decking side sills [~~has a knee joining said side sill medial portion to each of said side sill end portions~~] is joined to each of said end decking side sills by a knee;

each said knee has a longitudinally inboard flange, a longitudinally outboard flange, and webbing extending therebetween;

said longitudinally outboard flange has a lower extremity and an upper extremity;
and

said lower extremity lies at a longitudinally inboard station relative to said upper extremity.

16. (Twice Amended) The center beam rail road car of claim 23 wherein said medial decking portion has at least one lading securement apparatus mounted to said medial [~~portion~~] decking side sill web.

24. (Amended) The center beam rail road car of claim 23 wherein said medial decking side sill has a load securing device [~~is~~] mounted transversely outboard thereof.

26. (Amended) The center beam rail road car of claim 25 wherein said medial decking side sill [~~portion~~] web is inclined at a first angle relative to the vertical, and said end decking side sill web is inclined at a second angle relative to the vertical, said first angle being greater than said second angle.

30. (Twice Amended) The center beam rail road car of claim 23 wherein said top truss assembly is mounted at a height exceeding AAR Plate C.

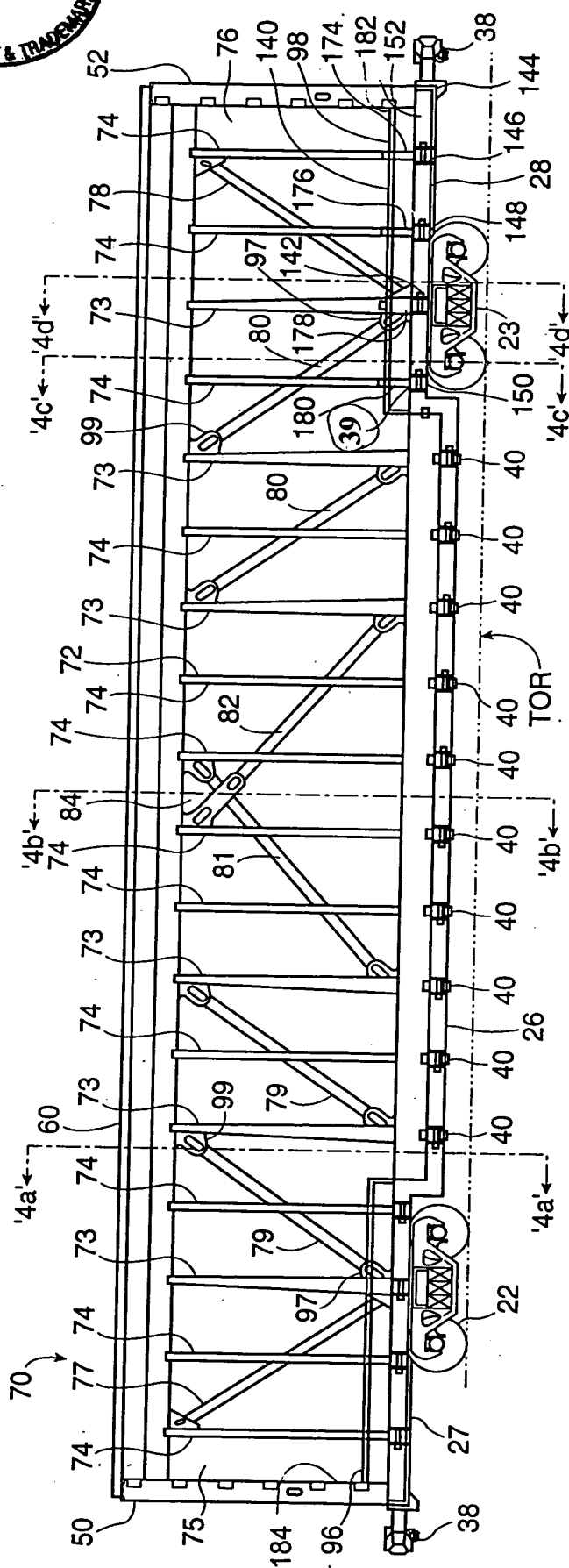


Figure 2a

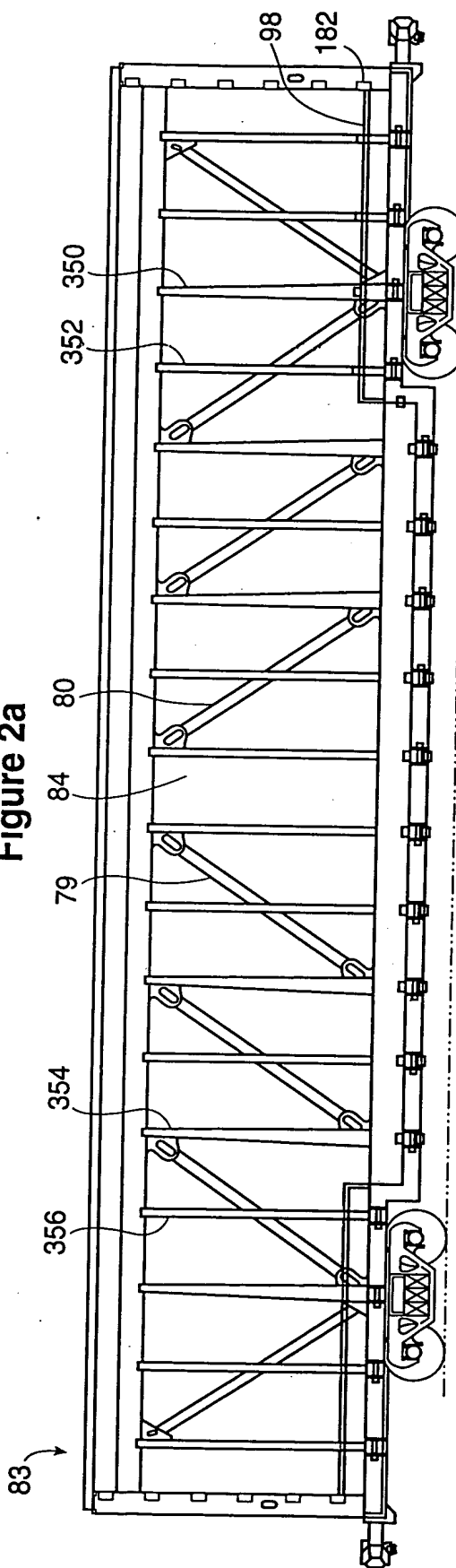


Figure 2b

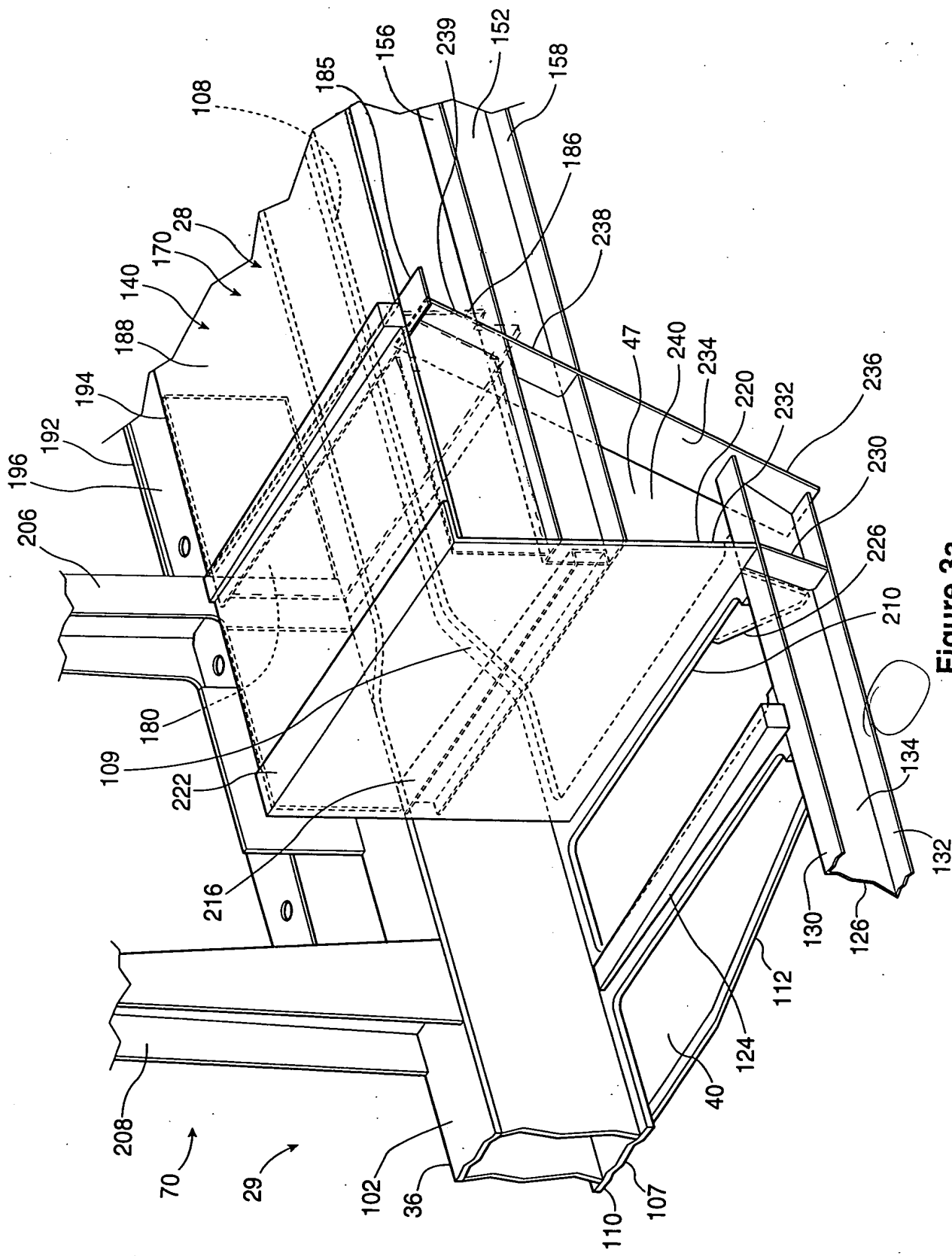


Figure 3a

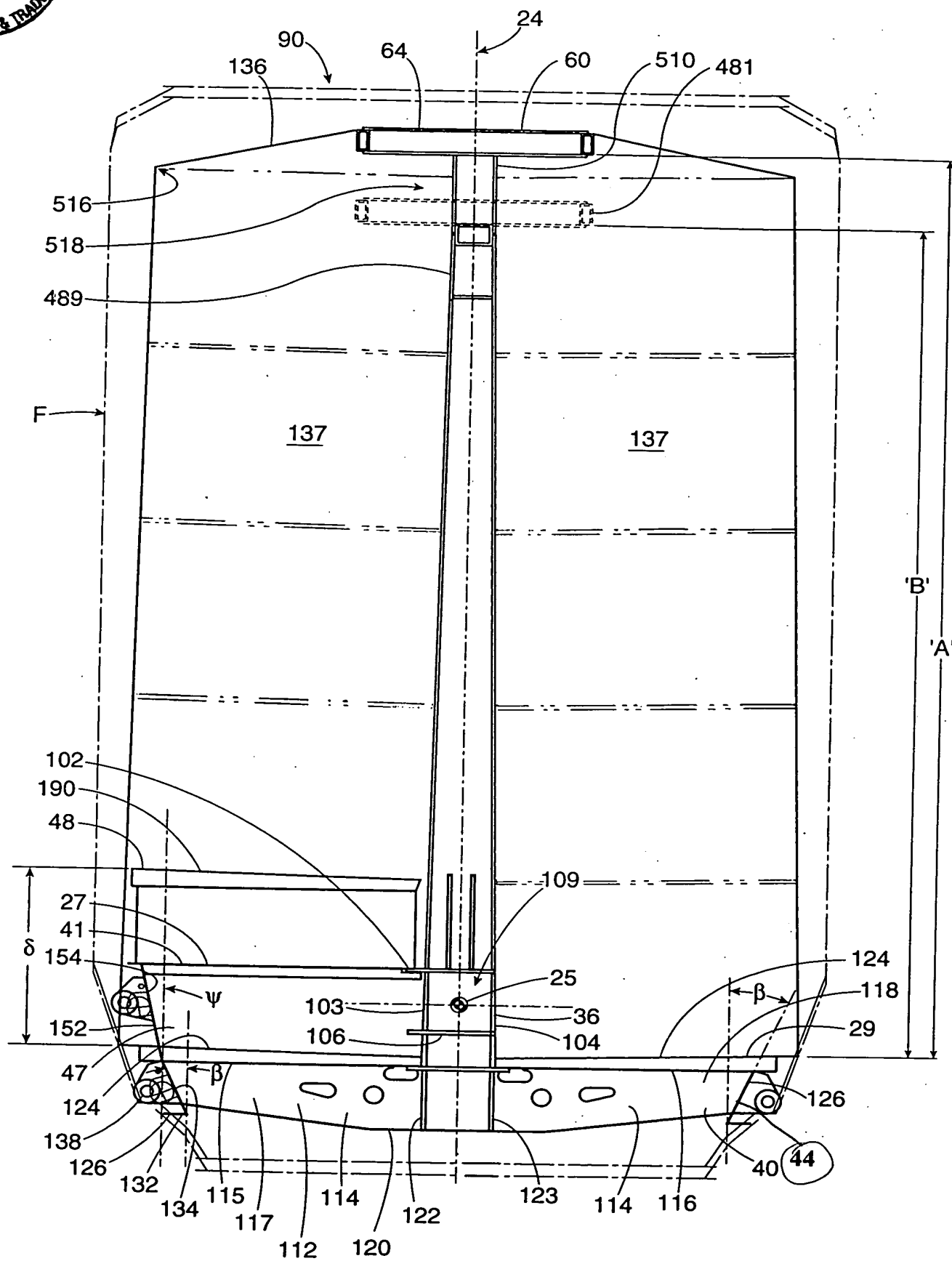


Figure 4a



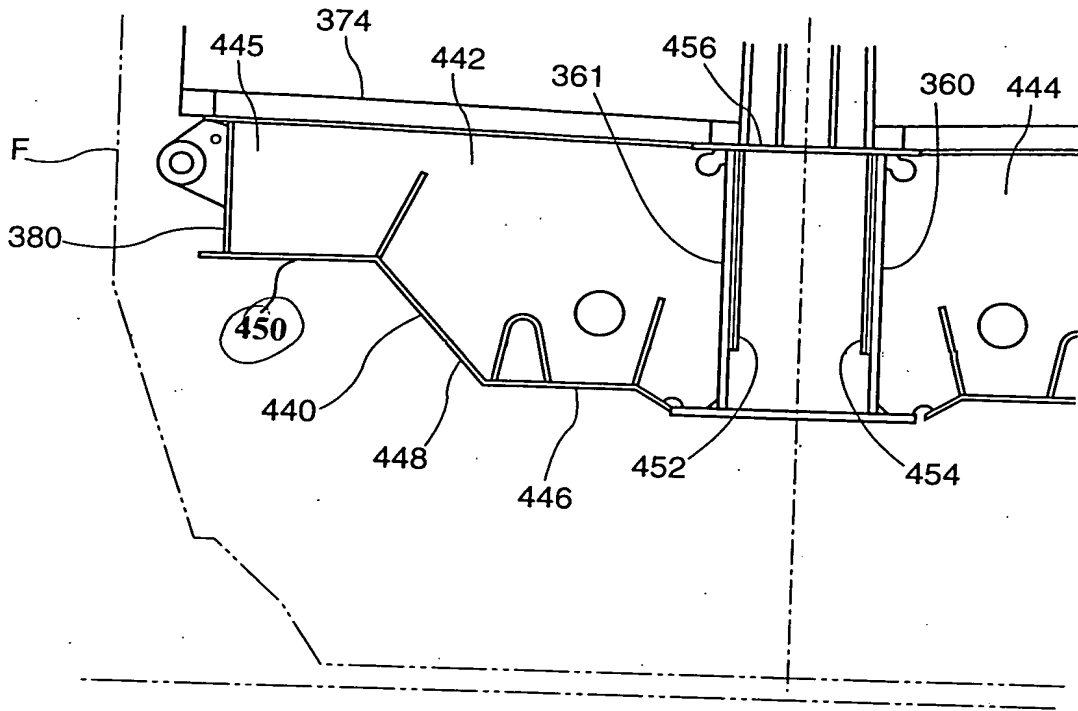


Figure 6c

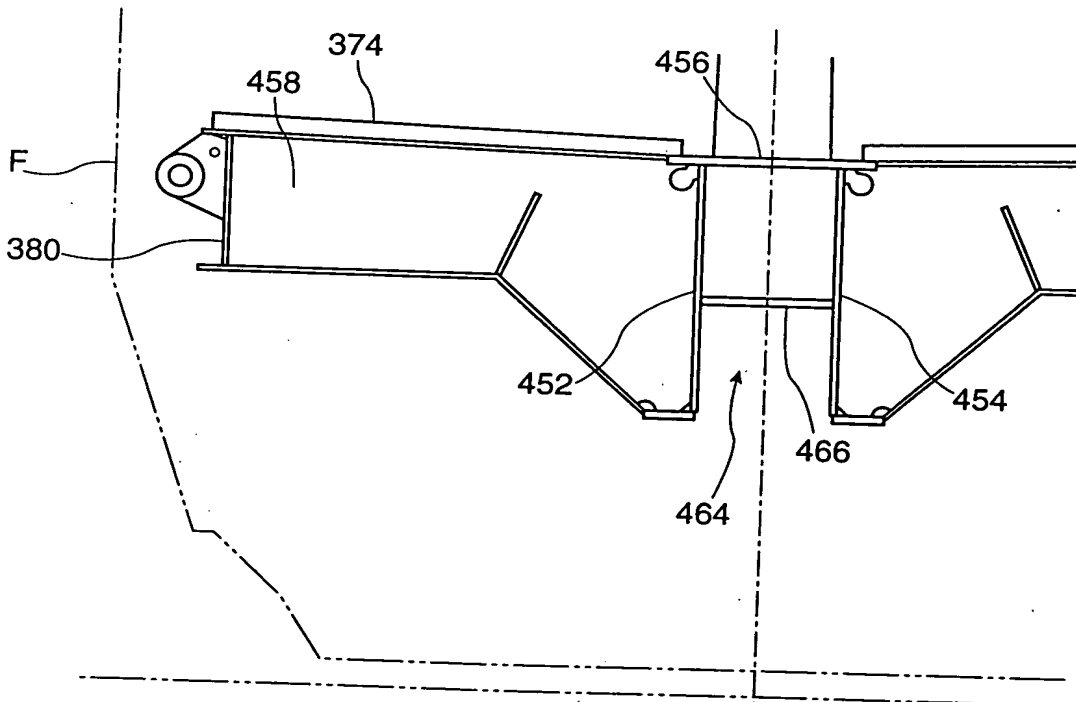


Figure 6d